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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/715,787	11/17/2000	Peter A. Barany	NORT0072US(12383RRUS02U)	9500
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Dan C. Hu TROP, PRUNER & HU, P.C. 8554 Katy Freeway, Ste. 100 Houston, TX 77024			EXAMINER MEW, KEVIN D	
			ART UNIT 2664	PAPER NUMBER

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/715,787

Applicant(s)

BARANY ET AL.

Examiner

Kevin Mew

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-12, 14-16 and 20-29 is/are allowed.
- 6) ☒ Claim(s) 1, 3, 4, 13, 17-19 and 30-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

Detailed Action

Response to Amendment

1. Applicant's arguments filed on July 7, 2004 regarding claims 1, 17, 30, 34, 35 have been considered. Newly added claims 36-41 have also been considered and are currently pending in the application. Claim 2 has been cancelled by the Applicant.

Specification

2. The amended specification was received on July 7, 2004 and was acceptable.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 17-19, 37-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Sizzad et al. (USP 6,035,434).

Regarding claim 17, Sazzad discloses a system for communicating over a wireless channel in a mobile communications network (GSM wireless system, see col. 1, lines 15-18), comprising:

an interface adapted to receive traffic data frames from a half-rate mobile station (interleaver module receives half-rate speech data, see col. 3, lines 19-21); and

a controller (see the integrated hardware blocks, Fig. 16) adapted to process a first data frame n , n being an even number, from the half-rate mobile station interleaved over plural bursts according to a first algorithm and to process a second data frame $n+1$, $n+1$ being an odd number, from the half-rate mobile station interleaved over plural bursts according to a second algorithm (see col. 4, lines 8-61).

Regarding claim 18, Sizzad discloses the system of claim 17, wherein the traffic data frames comprise speech (see col. 4, lines 8-20).

Regarding claim 19, Sizzad discloses the system of claim 17, wherein each data frame is interleaved over four bursts (see col. 4, lines 8-12).

Regarding claim 37, Sizzad discloses the system of claim 17, wherein the bursts are part of a multiframe, the multiframe having plural blocks,

wherein the first data frame n is interleaved according to the first algorithm by interleaving the first data frame n in bursts of two different blocks, the two different blocks selected based on n being an even number (see col. 4, lines 8-60), and wherein the second data frame $n+1$ is interleaved according to the second algorithm by interleaving the second data frame $n+1$ in bursts of two different blocks, the two different blocks selected based on $n+1$ being an odd number (see col. 4, lines 8-60).

Regarding claim 38, Sizzad discloses the system of claim 17, wherein the first data frame n is interleaved according to the first algorithm in response to n being an even number, and the second data frame is interleaved according to the second algorithm in response to $n+1$ being an odd number (see col. 4, lines 8-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-4, 13, 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakansson et al. (US Publication 2004/0062274).

Regarding claims 1, 34, Hakansson discloses a method of interleaving speech data over a plurality frames (**source data speech frames are interleaved**, see lines 1-12, paragraph 0027), comprising:

interleaving the speech data according to a first algorithm (**source speech data is interleaved for transmission according to the *diagonally blocked interleaving scheme***, see lines 1-12, paragraph 0027) over plural frames communicated over a wireless channel (**GSM wireless TCH/traffic channel**, see line 2, paragraph 0047, and lines 1-4, paragraph 0057) for a first set of speech data (see lines 1-12, paragraph 0027 and Fig. 5); and

Hakansson does not explicitly disclose interleaving the speech data according to a second algorithm.

However, Hakansson discloses that certain SID frames are interleaved according to a *block interleaving scheme* (interleaving data according to a second algorithm, see lines 1-12, paragraph 0027) over plural frames communicated over the wireless channel (**GSM wireless TCH/traffic channel**, see line 3, paragraph 0047, and lines 1-4, paragraph 0057 and Fig. 5) for a second set of data (**SID frames**, see lines 1-12, paragraph 0027).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving schemes of Hakansson such that the second interleaving scheme called block interleaving scheme that applies to the SID frames is being used as a second algorithm to interleave speech data such as the block interleaving scheme disclosed in Hakansson. The motivation to do so is to allow a wireless channel to support more than one bit rate and channel error protection when transmitting speech data under varying transmission channel conditions.

Regarding claim 3, Hakansson discloses the method of claim 1, wherein interleaving the data according to the first or second algorithm comprises interleaving over frames of a multiframe (see the **interleaved TDMA frames in a multiframe in Figs 5 and 6**, and lines 1-2, paragraph 0037 and lines 1-2, paragraph 0038).

Regarding claim 4, Hakansson discloses the method of claim 3, wherein interleaving over frames of the multiframe comprises interleaving over a General Packet Radio Service multiframe (It is inherent GPRS is the data service of the GSM system disclosed in Hakansson that the interleaved TDMA frames disclosed in Figs. 5 and 6 are in a GPRS multiframe).

Regarding claim 4, Hakansson discloses the method of claim 3, wherein interleaving over frames of the multiframe comprises interleaving over a General Packet Radio Service multiframe (It is inherent GPRS is the data service of the GSM system disclosed in Hakansson that the interleaved TDMA frames disclosed in Figs. 5 and 6 are in a GPRS multiframe).

Regarding claim 13, Hakansson discloses the method of claim 3, wherein the multiframe comprises plural blocks (**see the multiframe that comprises of 2 blocks, one block from Last Speech frame to NoTX frame, and another block from SID frame to First Speech frame**, in Figs. 5 and 6) and each block comprises plural frames (**see the TDMA frames in each block in Figs. 5 and 6**), each frame containing plural bursts (**see the bursts in each frame in Figs. 5 and 6**), the data being carried in data frames interleaved over bursts in the plural frames (see lines 1-12, paragraph 0027 and Figs. 5 and 6), the method further comprising:

receiving an end-of-data indicating frame to indicate that a data frame is the last data frame (**see Last Speech frame in Figs 5 and 6**); and

interleaving the end-of-data indicating frame according to predetermined algorithms (see lines 1-2, paragraph 0037 and lines 1-2, paragraph 0038 and Last Speech frame in Figs. 5 and 6),

wherein interleaving the data frames according to the first and second algorithms and the end-of-data indicating frame according to the predetermined algorithms enables the end-of-data indicating frame to end within the same block carrying the last data frame (**see the Last Speech frame in Figs. 5 and 6**).

5. Claims 30-33, 35-36, 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hakansson in view of Dent (USP 6,084,865).

Regarding claims 30, 32, Hankansson discloses a system, and an article comprising at least one storage medium containing instructions that when executed cause a system to:

receive traffic over a wireless channel portion (receives GSM wireless TCH/HS traffic from a mobile station via a wireless interface, see line 3, paragraph 0047, and line 3, paragraph 0012) from a first mobile station (see MS, Fig. 3) involved in half-rate communication (see lines 3-4, paragraph 0012, and MS, Fig. 3);

detect that the first mobile station has entered discontinuous transmission mode (performing discontinuous transmission by detecting periods of source data inactivity, see lines 1-2, 5-6, paragraph 0027) ; and

Hankansson does not explicitly show a system that comprises a controller that would multiplex traffic from a second mobile station onto the wireless channel portion while the first mobile station is in discontinuous transmission mode. However, Dent discloses a system (see Fig. 15) that comprises a controller (multiplexer, see Fig. 15) in which the bursts occupied by one mobile may be used by another mobile whenever the other is silent (see col. 22, lines 65-67 and col. 23, lines 1-27). Therefore, it would have been obvious to one person of ordinary skill in the art at the time the invention was made to combine the adaptive multi-rate wireless communications system of Hakansson with the traffic multiplexing method of Dent such that a second mobile station would multiplex speech and data traffic onto the channel originally being occupied by an idle first mobile station. The motivation to do so is to dynamically allocate available resources to other mobile stations when the resources occupied by one mobile station

become available because it would allow maximum flexibility in allocation of available resources.

Regarding claim 31, Hakansson discloses the article of claim 30, wherein the instructions when executed cause the system to receive speech traffic from the first mobile station (see col. 23, lines 1-27).

Regarding claims 33, 35-36, 40, Hakansson discloses the article of claim 30, wherein the instructions when executed cause the system to:

interleave a first speech traffic frame from the first mobile station over plural bursts according to a first algorithm (**source speech data is interleaved for transmission according to the *diagonally blocked interleaving scheme***, see lines 1-12, paragraph 0027).

Hakansson does not explicitly disclose interleaving a second speech traffic frame from the first mobile station over plural bursts according to a second algorithm.

However, Hakansson discloses that certain SID frames are interleaved according to a *block interleaving scheme* (interleaving data according to a second algorithm, see lines 1-12, paragraph 0027) over plural frames communicated over the wireless channel (GSM wireless TCH/traffic channel, see line 3, paragraph 0047, and lines 1-4, paragraph 0057 and Fig. 5) for a second set of data (SID frames, see lines 1-12, paragraph 0027).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the interleaving schemes of Hakansson such that the second interleaving scheme called block interleaving scheme that applies to the SID frames is being

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used as a second algorithm to interleave speech data of the same mobile station such as the block interleaving scheme disclosed in Hakansson. The motivation to do so is to allow a wireless channel to support more than one bit rate and channel error protection when transmitting speech data under varying transmission channel conditions.

Regarding claims 39, 41, Hakansson discloses the article of claim 30 and the system of claim 35 above, wherein the instructions when executed cause the system to further:

receive a request from the first mobile station to re-acquire the wireless channel portion, the request transmitted by the first mobile station in response to the first mobile station exiting discontinuous transmission mode (see paragraph 0028, lines 5-7); and

sending an assignment message to the first mobile station to assign the wireless channel portion in response to the request (see paragraph 0084, 6-8).

Allowable Subject Matter

6. Claims 5-12, 14-16, 20-29 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

In lines 10-13 of claim 5, the data is carried in data frame N starting in block B(x), and wherein interleaving the data frame N according to the first and second algorithms comprises interleaving the data frame N over blocks B(x + 2k) and B(x + 2k + 2), where $k = \text{INT}(N/2)$.

In lines 20-24 of claim 14, wherein the last data frame is data frame M starting in block B(x), wherein, if M is odd, interleaving the data frame M comprises interleaving the data frame

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M over bursts in the last frame in block $B(x)$ and the first three frames of $B(x+2)$, and wherein interleaving the end-of-data indicating frame comprises interleaving the end-of-data indicating frame over bursts in the last three frames of block $B(x+2)$.

In lines 9-12 of claim 20, data frames I , $I = 0$ to M , are received starting in block $B(x)$, the controller adapted to interleave data frame I over blocks $B(x + 2k)$ and $B(x + 2k + 2)$, where $k = \text{INT}(I/2)$.

Response to Arguments

7. Applicant's arguments with respect to claims 1, 17, 30, 34, 35 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure with respect to interleaving data frames in a wireless channel.

US Patent 6,658,064 to Rotola-Pukkila et al.

US Patent 6,101,465 to Sazzad et al.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'W. Chin', with a long horizontal line extending to the right.